## CLAIMS

1.   An editing system comprising:

a switch assembly comprising one or more software-implemented matrix switches, individual matrix switches comprising:

one or more input pins configured to receive a data stream; and

one or more output pins configured to output a data stream;

the one or more input pins being routable to the one or more output pins, the switch assembly being configured to process both compressed and uncompressed data streams to provide a compressed output data stream that represents a user-defined editing project.

2.   The editing system of claim 1, wherein the switch assembly comprises multiple switches.

3.   The editing system of claim 2, wherein one switch is configured to process compressed data streams.

4.   The editing system of claim 2, wherein one switch is configured to process uncompressed data streams.

5.   The editing system of claim 2, wherein one switch is configured to process compressed data streams, and one switch is configured to process uncompressed data streams.

6.   One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, provide the editing system of claim 1.

7.   The editing system of claim 1 configured as a multi-media editing system.

8.   An editing system comprising:

a media processing object configured to:

receive multiple data streams comprising compressed and uncompressed data streams; and

process the one or more data streams to provide a compressed output data stream that represents a media project.

9.   The editing system of claim 8, wherein the media processing object comprises a software-implemented switch assembly.

10.   The editing system of claim 8, wherein the media processing object comprises a software-implemented switch assembly having multiple pins configured to receive or provide data streams.

11.   The editing system of claim 8, wherein the media processing object comprises multiple software-implemented switches each of which having one or more pins configured to receive or provide data streams.

**12.**     The editing system of claim 8, wherein the media project comprises a multi-media project.

**13.**     A multi-media editing system comprising:

a switch assembly comprising one or more software-implemented matrix switches, individual matrix switches comprising:

one or more input pins configured to receive a data stream; and

one or more output pins configured to output a data stream;

the one or more input pins being routable to the one or more output pins, the switch assembly being configured to process both compressed and uncompressed data streams to provide a compressed output data stream that represents a user-defined multi-media editing project; and

one or more data structures associated with the switch assembly and configured for use in programming the switch assembly to provide a routing scheme for routing input pins to output pins for a given multi-media editing project time line.

**14.**     The multi-media editing system of claim 13, wherein the one or more data structures comprise one or more grid structures, individual grid structures being configured to contain data that defines an association between input and output pins for the project time line.

**15.**     The multi-media editing system of claim 13, wherein the switch assembly comprises multiple switches.

**16.** The multi-media editing system of claim 15, wherein the one or more data structures comprise a data structure associated with at least some of the multiple switches.

**17.** The multi-media editing system of claim 16, wherein the data structures comprise grid structures that contain data that defines an association between input and output pins for the project time line.

**18.** The multi-media editing system of claim 15, wherein one switch is configured to process compressed data streams, and another switch is configured to process uncompressed data streams.

**19.** The multi-media editing system of claim 18, wherein the one or more data structures comprise data structures associated with the switches that are configured to process the compressed and uncompressed data streams.

**20.** The multi-media editing system of claim 19, wherein the data structures comprise grid structures that contain data that defines an association between each switch's input and output pins for the project time line.

**21.** A multi-media editing system comprising:

a switch assembly comprising one or more non-hardware matrix switches, individual matrix switches comprising:

one or more input pins configured to receive a data stream; and

one or more output pins configured to output a data stream;

the one or more input pins being routable to the one or more output pins, the switch assembly being configured to process both compressed and uncompressed data streams to provide a compressed output data stream that represents a user-defined multi-media editing project.

**22.** The multi-media editing system of claim 21, wherein the switch assembly comprises multiple switches.

**23.** The multi-media editing system of claim 22, wherein one switch is configured to process compressed data streams.

**24.** The multi-media editing system of claim 22, wherein one switch is configured to process uncompressed data streams.

**25.** The multi-media editing system of claim 22, wherein one switch is configured to process compressed data streams, and another switch is configured to process uncompressed data streams.

**26.** The multi-media editing system of claim 21 further comprising one or more data structures associated with the switch assembly and configured for use in programming the switch assembly to provide a routing scheme for routing input pins to output pins for a given multi-media editing project time line.

27.    The multi-media editing system of claim 26, wherein the one or more data structures comprise grid structures that contain data that defines an association between input and output pins for the project time line.

28.    An media processing system comprising:

switch means for receiving compressed and uncompressed data streams associated with sources that are to be incorporated into a project and processing the compressed and uncompressed data streams to provide a single compressed output stream that represents the project; and

programming means associated with the switch means and configured to program the switch means to provide the single compressed output stream.

29.    The multi-media editing system of claim 28, wherein the switch means comprises:

first switch means for processing the uncompressed data stream to provide an output uncompressed data stream;

second switch means for processing the compressed data stream to provide an output compressed data stream; and

third switch means for processing the output uncompressed and compressed data streams to provide the single compressed output stream.

30.    The multi-media editing system of claim 28, wherein the switch means comprises means for providing a data stream as a feedback data stream that is processed by the switch means.

**31.** The multi-media editing system of claim 28, wherein the switch means comprises switch means implemented in software.

**32.** The multi-media editing system of claim 28, wherein the switch means comprises:

first software switch means for processing the uncompressed data stream to provide an output uncompressed data stream;

second software switch means for processing the compressed data stream to provide an output compressed data stream; and

third software switch means for processing the output uncompressed and compressed data streams to provide the single compressed output stream.

**33.** A multi-media editing system comprising:

a first software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the first matrix switch being configured to process one or more uncompressed data streams and output an uncompressed data stream;

a second software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the second matrix switch being configured to process one or more compressed data streams and output a compressed data stream; and

a third software-implemented matrix switch comprising multiple input pins and multiple output pins, the input pins being routable to one or more output pins, the third matrix switch being configured to receive an uncompressed data stream

from the first switch and a compressed data stream from the second switch and process the received data streams to provide a single compressed output data stream that represents a user-defined multi-media editing project.

**34.** The multi-media editing system of claim 33 further comprising a software-implemented compressor element coupled with the third switch and configured to receive and compress an uncompressed data stream.

**35.** The multi-media editing system of claim 34 further comprising a feedback path between the compressor element and an input pin of the third switch configured to provide a compressed data stream to the third switch's input pin.

**36.** The multi-media editing system of claim 33, wherein the third switch is programmed to receive, when available, a data stream from the second switch and, when a data stream is unavailable from the second switch, seek a data stream from the first switch.

**37.** One or more computer-readable having computer-readable instructions thereon which, when executed by a computer, provide the multi-media editing system of claim 33.

**38.** A multi-media editing system comprising:

first software switch means for processing one or more uncompressed data streams to provide an uncompressed data stream, the switch means comprising at

least one feedback loop that modifies a data stream that is output by the switch means and provides the modified data stream as an input to the switch means;

second software switch means for processing one or more compressed data streams to provide a compressed data stream; and

a third software switch means for receiving an uncompressed data stream from the first software switch means and a compressed data stream from the second software switch and processing the received data streams to provide a single compressed output data stream that represents a user-defined multi-media editing project.

**39.** The multi-media editing system of claim 38 further comprising programming means associated with the first and second software switch means for programming routing of data streams therethrough.

**40.** A multi-media editing system comprising:

a first software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the first matrix switch being configured to process one or more uncompressed data streams and output an uncompressed data stream;

a second software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the second matrix switch being configured to process one or more compressed data streams and output a compressed data stream;

a third software-implemented matrix switch comprising multiple input pins and multiple output pins, the input pins being routable to one or more output pins, the third matrix switch being configured to receive an uncompressed data stream from the first switch and a compressed data stream from the second switch and process the received data streams to provide a single compressed output data stream that represents a user-defined multi-media editing project; and

one or more data structures associated with at least some of the matrix switches and configured for use in programming the associated switches to provide a routing scheme for routing input pins to output pins.

**41.** The multi-media editing system of claim 40, wherein the one or more data structures comprise one or more grid structures that contain data that defines an association between input and output pins for a project time line.

**42.** The multi-media editing system of claim 40, wherein the one or more data structures comprise multiple data structures, individual data structures being associated with the first and second switches.

**43.** The multi-media editing system of claim 42, wherein the data structures comprise grid structures each of which contains data that defines an association between input and output pins of its associated switch for a project time line.

**44.** A multi-media editing method comprising:

providing a switch assembly comprising one or more software-implemented matrix switches, individual matrix switches comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the switch assembly being configured to process both compressed and uncompressed data streams to provide a compressed output data stream that represents a user-defined multi-media editing project; and

programming the switch assembly using one or more data structures, said programming providing a routing scheme for routing input pins to output pins for a given time period.

**45.** The multi-media editing method of claim 44, wherein said providing comprises providing multiple switches at least one of which being configured to process both compressed and uncompressed data streams.

**46.** The multi-media editing method of claim 44, wherein said providing comprises providing multiple switches, one of which being configured to process only compressed data streams.

**47.** The multi-media editing method of claim 44, wherein said providing comprises providing multiple switches, one of which being configured to process only uncompressed data streams.

**48.**     The multi-media editing method of claim 44, wherein said providing comprises providing multiple switches:

at least one of which being configured to process both compressed and uncompressed data streams;

at least one of which being configured to process only compressed data streams; and

at least one of which being configured to process only uncompressed data streams.

**49.**     The multi-media editing method of claim 44, wherein said programming comprises programming the switch assembly using one or more grid structures, individual grid structures containing data defining an association between input pins, output pins, and a project time line.

**50.**     The multi-media editing method of claim 44 further comprising:

representing the editing project as a hierarchical tree structure; and

processing the hierarchical tree structure to provide at least one grid structure containing data that defines an association between input pins, output pins and a time line defined by the editing project.

**51.**     The multi-media editing method of claim 44, wherein said programming comprises:

defining a first grid structure containing data that defines an association between input pins, at least one output pin and a time line defined by the editing project; and

defining a second grid structure containing data that defines an association between different input pins, at least one different output pin and the time line defined by the editing project.

**52.** The multi-media editing method of claim 51, wherein the first grid structure is associated with programming the switch assembly to process the uncompressed data stream.

**53.** The multi-media editing method of claim 51, wherein the second grid structure is associated with programming the switch assembly to process the compressed data stream.

**54.** The multi-media editing method of claim 51, wherein said defining of the second grid structure comprises deriving the second grid structure from the first grid structure.

**55.** One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, implement the method of claim 44.

**56.** A multi-media editing application executable on one or more computers to implement the method of claim 44.

**57.** One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, cause the computer to:

provide a switch assembly comprising multiple software-implemented matrix switches, individual matrix switches comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the switch assembly comprising:

a first switch configured to process uncompressed data streams to provide an uncompressed output data stream;

a second switch configured to process compressed data streams to provide a compressed output data stream; and

a third switch configured to receive both the uncompressed and compressed output data streams and process the data streams to provide a compressed output data stream that represents a user-defined multi-media editing project; and

program the switch assembly by defining a first grid structure containing data that defines an association between the first switch's input pins, at least one output pin and a time line defined by the editing project, and defining a second grid structure containing data that defines an association between the second switch's input pins, at least one output pin and the time line defined by the editing project.

**58.** The computer-readable media of claim 57, wherein the instructions cause the computer to derive the second grid structure from the first grid structure.

**59.**    The computer-readable media of claim 58, wherein the instructions cause the computer to derive the second grid structure by:

determining whether any entries in the second grid structure are associated with a data stream source that is not in a format that is the same as or compatible with a format associated with the compressed output data stream that represents a user-defined multi-media editing project; and

removing any entry that is not in the same or compatible format.

**60.**    The computer-readable media of claim 59, wherein said format is associated with a frame rate.

**61.**    The computer-readable media of claim 59, wherein said format is associated with a data rate.

**62.**    The computer-readable media of claim 58, wherein the instructions cause the computer to derive the second grid structure by:

copying the first grid structure;

evaluating the copied grid structure to ascertain entries associated with data source streams that are modified in some way; and

removing any grid entries associated with data source streams that are modified in some way.

**63.**    A multi-media editing method comprising:

providing a first software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being

routable to the one or more output pins, the first matrix switch being configured to process one or more uncompressed data streams and output an uncompressed data stream;

providing a second software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins, the second matrix switch being configured to process one or more compressed data streams and output a compressed data stream;

providing a third software-implemented matrix switch comprising multiple input pins and multiple output pins, the input pins being routable to one or more output pins;

receiving, with the third matrix switch, an uncompressed data stream from the first switch and a compressed data stream from the second switch; and

processing the received data streams with the third switch to provide a single compressed output data stream that represents a user-defined multi-media editing project.

**64.** The multi-media editing method of claim 63, wherein said processing comprises:

compressing the uncompressed data stream received from the first switch using a software-implemented compressor element coupled with the third switch; and

routing the compressed data stream that was compressed by the compressor element to an input pin of the third switch.

**65.** The multi-media editing method of claim 63 further comprising receiving with the third switch, when available, a data stream from the second switch and, when a data stream is unavailable from the second switch, seeking with the third switch, a data stream from the first switch.

**66.** One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, implement the method of claim 63.

**67.** One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, cause the computer to:

process at least one compressed data stream to provide an output compressed data stream that comprises a portion of a user-defined multi-media editing project that is associated with a data stream source;

process one or more uncompressed data streams to manipulate the one or more uncompressed data streams to provide an output uncompressed data stream that comprises a different portion of a user-defined multi-media editing project that is associated with one or more data stream sources;

compress the output uncompressed data stream; and

associate the output compressed data stream and the compressed output uncompressed data stream together to provide a compressed stream that represents a user-defined multi-media editing project.

**68.** The computer-readable media of claim 67, wherein the instructions cause the computer to provide a software-implemented matrix switch that associates the data streams to provide the user-defined multi-media editing project.

**69.** The computer-readable media of claim 67, wherein the instructions cause the computer to provide a software-implemented matrix switch that associates the data streams to provide the user-defined multi-media editing project, the software-implemented matrix switch being configured to receive the output compressed data stream when it is available, and seek the output uncompressed data stream when the output compressed data stream is unavailable.

**70.** One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, cause the computer to:

receive and process one or more uncompressed data streams with a first software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins to output an uncompressed data stream;

receive and process one or more compressed data streams with a second software-implemented matrix switch comprising one or more input pins and one or more output pins, the one or more input pins being routable to the one or more output pins to output a compressed data stream;

receive and process the uncompressed data stream that is output by the first switch and the compressed data stream that is output by the second switch with a third software-implemented matrix switch comprising multiple input pins individual ones of which receive data streams, and one or more output pins

individual ones of which provide data streams, the one or more input pins being routable to the one or more output pins to output, at one output pin, a compressed data stream that represents a user-defined multi-media editing project.

71. The computer-readable media of claim 70, wherein the instructions cause the computer to:

compress the uncompressed data stream output by the first switch using the third switch; and

incorporate the compressed uncompressed data stream with the compressed data stream that is output by the second switch to provide the compressed data stream that represents the user-defined editing project.

72. The computer-readable media of claim 70, wherein the instructions cause the computer to program the first and second switches using first and second data structures respectively associated with the first and second switches, each data structure providing a routing scheme for routing switch input pins to switch output pins.

73. The computer-readable media of claim 72, wherein the first and second data structures comprise grid structures that provide an association between input pins, output pins and a time line defined by a user-defined multi-media editing project.

**74.** The computer-readable media of claim 73, wherein the instructions cause the computer to derive the second grid structure from the first grid structure.

**75.** The computer-readable media of claim 74, wherein the instructions cause the computer to derive the second grid structure by:

copying the first grid structure;

evaluating the copied grid structure to ascertain entries associated with data source streams that are modified in some way; and

removing any grid entries associated with data source streams that are modified in some way.